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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/599,932	10/13/2006	Yasuyoshi Yoshikai	4749-013	6740

22429 7590 02/19/2008
LOWE HAUPTMAN HAM & BERNER, LLP
1700 DIAGONAL ROAD
SUITE 300
ALEXANDRIA, VA 22314

EXAMINER

DUVERNE, JEAN F

ART UNIT	PAPER NUMBER
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2839

MAIL DATE	DELIVERY MODE
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02/19/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/599,932

Applicant(s)

YOSHIKAI, YASUYOSHI

Examiner

Jean F. Duverne

Art Unit

2839

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 January 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-15 is/are allowed.
- 6) ☒ Claim(s) 8, 18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

After reviewing the translation of the Japanese reference, Kazuto (2003-100370), the Examiner has decided to issue non-final office action.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 8 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Kazuto (JP2003-100370).

Kazuto's device discloses a connector (see abstract) provided with a connector body (housing 2. paragraph 015. see drawings 1-5, 7-10) to which one end of an object (flexible substrate 30. paragraph 0020, see drawings 1,5, 7-10) to be connected and inserted at a predetermined position, (drawings 1,5, 7-10 and paragraph 0020 teach that an end of the flexible substrate 30 is inserted into the connector housing 2 where the flexible substrate 30 is "pushed against the contact segment 8 of contact 6" as shown particularly in drawings 7-8 so as to be connected to the connector, it is further noted that the position where the flexible substrate 30 is moved so that it may be secured in the connector is considered a "predetermined position", see more below about the predetermined position) a plurality of terminals (plurality of contacts 6 which are "held by standing in a row in a predetermined pitch is exposed in opening 3",

paragraph 0015, drawings 1,3,7) in contact with the object (flexible substrate 30) to be connected and inserted into the connector body (paragraph 0020 further states that the flexible substrate 30 is pushed against contact segments 8 of the contacts 6 and “ connects electrically in a right location” as shown drawings 7-8) and a pressing member(pressurization member 12, paragraph 0021, drawings 1-5, 7-10) for pressuring(see figures 5,7-10) the object(flexible substrate 30) to be connected to each of the terminals side by being inserted into the connector body(pressurization member 12 pushes down on the flexible substrate 30 which has been inserted into the opening 3 of connector housing 2 so that the flexible substrate 30 is connected to each of the contacts 6 as disclosed in paragraph 0020), wherein a temporary holding member(elastic support 25, paragraph 0022, drawings 5, 8-10) is elastically deformed in a predetermined direction while being contact with one face of the object(flexible substrate 30) to be connected and inserted into the connector body(paragraph 0021 states that when the flexible substrate 30 is pressed by pressurization member 12, the flexible substrate 30 is held in place by the elastic stability of the elastic support 25 carried out by elastic deformation; wherein said temporary holding member is provided with a connection portion to be connected to a board to which the connector body is connected (see abstract).

Conclusion

Claims 1-7, 9-15 are allowed (see allowable subject matter in previous office) action.

Art Unit: 2839

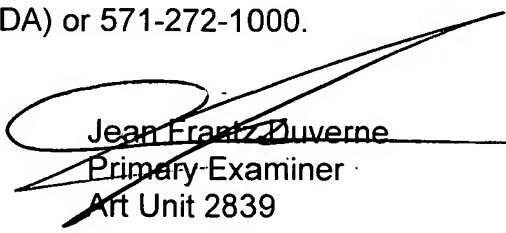
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jean F. Duverne whose telephone number is (571) 272-2091. The examiner can normally be reached on 9:00-7:30, Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, TC Patel can be reached on (571) 272-2098. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JFD

02/01/2008



Jean Frantz Duverne
Primary Examiner
Art Unit 2839



1 / 1

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2003-100370
 (43)Date of publication of application : 04.04.2003

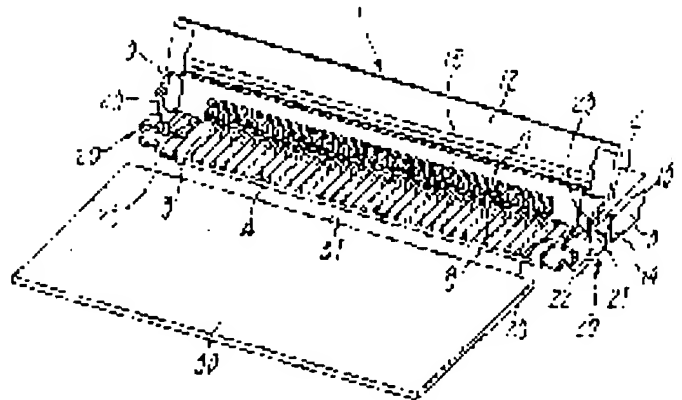
(51)Int.Cl. H01R 12/28

(21)Application number : 2001-290911 (71) JST MFG CO LTD
 Applicant :
 (22)Date of filing : 25.09.2001 (72)Inventor : MIURA KAZUTO

(54) CONNECTOR FOR FLEXIBLE BOARD

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a connector for a flexible board capable of elastically holding a flexible board inserted on the contact part of a contact to prevent dislocation or coming-off, and capable of enhancing the holding force for the flexible board under a pressurized connection state by a pressurizing member.
SOLUTION: A connector 1 for a flexible board comprises a housing 2 where a plurality of contacts 6 are housed side by side at a prescribed pitch in an opening part 3, and a pressurizing member 12 which, provided to open/close the opening part 3, pressurizes a flexible board 30 provided on the contact part 8 of the contact 6 against the contact part 8. A reinforcing bracket 20 fitted to both end side walls 5 and 5 of the housing 2 in the direction parallel to the contact 6 and soldered to a printed wiring board, is provided with elastic support pieces 25 and 25 which elastically pressurize and



support the flexible board 30 provided on the contact
part 8 of the contact 6.

LEGAL STATUS

[Date of request for examination]	06.05.2003
[Date of sending the examiner's decision of rejection]	
[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]	
[Date of final disposal for application]	
[Patent number]	3605586
[Date of registration]	08.10.2004
[Number of appeal against examiner's decision of rejection]	
[Date of requesting appeal against examiner's decision of rejection]	
[Date of extinction of right]	

JAPANESE

[JP,2003-100370,A]

CLAIMS DETAILED DESCRIPTION TECHNICAL FIELD
PRIOR ART EFFECT OF THE INVENTION TECHNICAL
PROBLEM MEANS DESCRIPTION OF DRAWINGS
DRAWINGS

[Translation done.]

* NOTICES *

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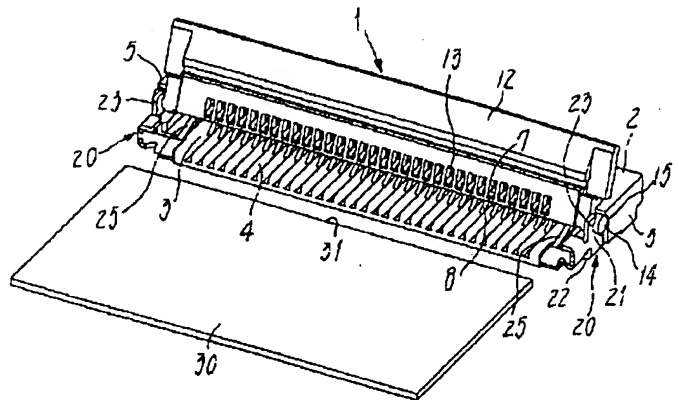
CLAIMS

[Claim(s)]

[Claim 1] Housing with which two or more contacts are held in opening by standing in a row in the predetermined pitch, In the connector for flexible substrates equipped with the pressurization member which presses the flexible substrate which is formed so that said opening may be opened and closed, and is arranged on the contact section of said contact in said contact section It is attached in the both ends of said housing in the juxtaposition direction of said contact. The connector for flexible substrates characterized by preparing the piece of elastic support which presses elastically said flexible substrate arranged on the contact section of said contact to the reinforcement metallic ornaments soldered to a printed wired board, and supports it to them.

[Claim 2] The connector for flexible substrates according to claim 1 currently formed in the HE typeface to which the amount of point inclines and extends downward while connection support is carried out by the cantilever structure at the substrate insertion opening side of said opening of said housing at said reinforcement metallic ornaments, and said piece of elastic support inclines into [inner] said housing upward and is prolonged from said substrate insertion opening.

[Claim 3] The connector for flexible substrates according to claim 1 or 2 characterized by said piece of elastic support engaging with the engagement hole or notch prepared in the both-sides edge of said flexible substrate elastically.

Drawing selection **Representative draw**

[Translation done.]

[Claim 4] The connector for flexible substrates according to claim 1, 2, or 3 characterized by having the bearing section which said reinforcement metallic ornaments which said pressurization member was attached in said housing free [rotation], and opened and closed said opening and were attached in the both ends of said housing support for said pressurization member, enabling free rotation.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the connector for FURESHI kibble substrates used for connecting a flexible substrate to a printed wired board.

[0002]

[Description of the Prior Art] Although the thing of various types is conventionally known by the electrical connector which connects flexible substrates, such as a flexible print cable (FPC) and a flexible flat cable (FFC) Housing with which two or more contacts are fundamentally held in opening by standing in a row in the predetermined pitch, It is a configuration equipped with the pressurization member which presses the flexible substrate which is formed so that said opening may be opened and closed, and is arranged on the contact section of said contact in said contact section. (For example, reference, such as JP,6-77186,U, the patent No. 3029985 official report, and the patent No. 3075707 official report) .

[0003] And said pressurization member is divided roughly into the covering type attached free [rotation] to said housing, and the slider type fitted in free [sliding] to said housing, and ZIF structure, i.e., the non-insert-and-remove force type connector for flexible substrates, is used widely. Moreover, the connector for flexible substrates of Non-ZIF structure is also known.

[0004]

[Problem(s) to be Solved by the Invention] However, since said flexible substrate was not held at all after the connector for flexible substrates of the conventional ZIF structure arranges a flexible substrate on the contact section of contact of said connector until it operates covering or the slider of said pressurization member to an actuated position, even if it was a small vibration and external force, said flexible substrate may have shifted from the stowed position, and contact dependability may have been reduced. In order to prevent such a gap, an operator needs to hold a flexible substrate to a stowed position by one hand, and needs to operate covering or the slider of said pressurization member by the hand of another side, and workability is bad.

[0005] On the other hand, after arranging a flexible substrate on a stowed position also by the connector for flexible substrates of Non-ZIF structure, by the type which carries out rotation actuation of the covering of said pressurization member in an actuated position, the holding power of said hula KISHIBURU substrate before operating said covering had a possibility that a flexible substrate might shift from a stowed position like the above rather than was enough.

[0006] Moreover, also in the connector for flexible substrates of which type,

fundamentally, since it was dependent on the number of said contact sections with which the flexible substrate pressed by said pressurization member contacts, i.e., the pole of said contact, when the external force of the direction of drawing or a longitudinal direction joined said flexible substrate, it may have escaped from the holding power of a flexible substrate, or it may have shifted. In the connector for flexible substrates with the especially small pole of said contact, holding power was weak and the above danger was high.

[0007] On the other hand, in order to prevent a gap and omission of the above flexible substrates, the connector for flexible substrates which prepared the engagement hole or the notch in the flexible substrate, and formed the boss or latch pawl which engages with this engagement hole or a notch in housing of a connector is indicated by JP, 10-106694, A and JP, 2000-182697, A, but the connector equipped with such a ratchet mechanism has the problem that where of possibility of damaging a flexible substrate or a connector is high, when the big drawing force is added.

[0008] This invention aims at offering the connector for flexible substrates which is made in view of the above-mentioned conventional trouble, can hold elastically said flexible substrate by which insertion arrangement was carried out on the contact section of contact of said connector, and can prevent a location gap and ejection, and can heighten the holding power of said flexible substrate in the pressurization connection condition by the pressurization member.

[0009]

[Means for Solving the Problem] Housing held by two or more contacts arranging this invention in parallel in a predetermined pitch in opening in order to attain the above-mentioned purpose, In the connector for flexible substrates equipped with the pressurization member which presses the flexible substrate which is formed so that said opening may be opened and closed, and is arranged on the contact section of said contact in said contact section It is attached in the both ends of said housing in the juxtaposition direction of said contact, and is characterized by preparing the piece of elastic support which presses elastically said flexible substrate arranged on the contact section of said contact to the reinforcement metallic ornaments soldered to a printed wired board, and supports it to them.

[0010] Connection support is carried out to a cantilever structure at the substrate insertion opening side of said opening of said housing at said reinforcement metallic ornaments, and said piece of elastic support is formed in the HE typeface to which the amount of point inclines and extends downward while it inclines into [inner] said housing upward and is prolonged from said substrate insertion opening.

[0011] Moreover, when said piece of elastic support constituted so that it might engage with the engagement hole or notch prepared in the both ends of said flexible substrate, a gap and omission of said flexible substrate can be prevented more certainly and external force, such as superfluous drawing force, moreover joins said flexible substrate, by the elastic deformation of said piece of elastic support, engagement is canceled and breakage of a flexible substrate and a connector can be prevented beforehand.

[0012] Furthermore, it is possible to them to prepare the bearing section supported for said pressurization member, enabling free rotation, and if said pressurization member is supported to revolve to said reinforcement metallic ornaments by said reinforcement metallic ornaments in this way, it is advantageous to them in reinforcement.

[0013]

[Embodiment of the Invention] Hereafter, the gestalt of suitable operation of this invention is explained based on a drawing.

[0014] the perspective view and drawing 2 which show the connector for flexible substrates and a flexible substrate according [drawing 1] to this invention -- a part of this connector -- the expanded sectional view of the contact hold section of this connector and drawing 4 of a vertical section expansion side elevation and drawing 3 are the expanded sectional views of the reinforcement metallic-ornaments applied part of this connector.

[0015] The housing 2 of the connector 1 for flexible substrates is fabricated with insulating plastic material, it has the opening 3 wide opened by the amount of first portion towards the upper part, and the pressurization member 12 later mentioned on the side attachment walls 5 and 5 of both ends while the contact hold slot 4 in which two or more contacts 6 (refer to drawing 3) are held by standing in a row in a predetermined pitch is exposed to opening 3 and is prepared is supported to revolve free [rotation], and the reinforcement metallic ornaments 20 are attached.

[0016] As contact 6 is shown in drawing 3 , it is formed in the shape of [with which the edge of the piece 7 of support which is pierced, processed and manufactured and carries out phase opposite of the metallic thin plate, and a contact segment 8 was connected in one through the connection section 9] dichotomy, and the lead sections 10 which extend back are formed successively by the connection section 9. Contact 6 was inserted in each hold slot 4 from the back of housing 2, and was held according to the individual, and the piece 7 of support and the contact segment 8 have exposed it to opening 3 while making the wall of the hold slot 4 consume the projection 11 prepared in the piece 7 of support and being fixed. Moreover, in case the lead section 10 mounts a projection and a connector 1 in a printed wired board (not shown) from the posterior part of housing 2 to an outside lower part, it is soldered to a circuit pattern.

[0017] The pressurization member 12 is fabricated with insulating plastic material like housing 2, and the opening 3 of housing 2 is formed in the shape of a wrap cover plate. The rotation support shanks 14 and 14 by which the stop hole 13 with which tip hook section 7a of the piece 7 of support of the contact 6 by which hold maintenance was carried out is engaged is formed in housing 2 corresponding to the contact hold slot 4, and the shape of a short cylinder was formed in both ends protrude on this pressurization member 12. The bearing sections 15 and 15 which have the circular concave bend side where the support shanks 14 and 14 of the pressurization member 12 are engaged rotatable are formed as well shown in drawing 2 in the both-ends side attachment walls 5 and 5 of housing 2 on the other hand.

[0018] The reinforcement metallic ornaments 20 attached in the both-ends side attachment walls 5 and 5 of housing 2 The support arm 21 fixed to the attaching hole 16 (refer to drawing 2) prepared inside the side attachment wall 5 by inserting from the opening 3 front as bending is pierced and carried out; it is manufactured and a metallic thin plate is shown in drawing 6 , The soldering section 22 which bends, is formed in the inner direction at the interstitial segment bottom of this support arm 21, and is prolonged to the method of inside along the base of a side attachment wall 5, The bearing section 23 which has the concave bend side of a semicircle arc which projects in the back flank section of the support arm 21 upwards, is formed in it, collaborates with the bearing

section 15 of housing 2, and supports the support shank 14 of the pressurization member 12 to revolve free [rotation], The connection section 24 which bent and was formed in the inner direction at the back end part bottom of the support arm 21, It consists of the piece 25 of elastic support connected with the edge of this connection section 24 in one. Body section 25a to which the piece 25 of elastic support is prolonged almost in parallel with the support arm 21, and a end face part has the cantilever structure connected with the connection section 24, and inclines and extends upward to the connection section 24, It is formed in the HE typeface (or reverse HE typeface) which has a convexly curved portion 26 between point 25b inclined and prolonged downward from a part for the point of this body section 25a. Furthermore, the piece 27 of reinforcement corresponding to the connection section 24 bends, and is formed in the inner direction at the back end section bottom of the support arm 21. In addition, the reinforcement metallic ornaments 20 shown in drawing 6 are attached in the side attachment wall 5 on the right-hand side of housing 2 in drawing 1 , and the reinforcement metallic ornaments 20 attached for the left-hand side side attachment wall 5 have the illustrated reinforcement metallic ornaments 20 and a symmetrical configuration.

[0019] If the two above-mentioned reinforcement metallic ornaments 20 and 20 insert the support arm 21 in the attaching hole 16 (refer to drawing 2) prepared inside the side attachment wall 5 of housing 2, respectively and wearing immobilization is carried out, as shown in drawing 4 The piece 25 of elastic support is arranged with the posture toward which point 25b inclined downward while body section 25a inclines into [inner] housing 2 upward and is prolonged from the substrate insertion opening side of opening 3.

[0020] In the condition that the pressurization member 12 is in an upper open position to housing 2 as it ** and is shown in drawing 1 and drawing 2 If the point 31 of the flexible substrate 30 is inserted between the piece 7 of support of contact 6, and a contact segment 8 through opening 3 and the flexible substrate 30 is arranged in the predetermined location on a contact segment 8, as shown in drawing 5 The both-sides edge part of the flexible substrate 30 is pushed up by the elastic force of the pieces 25 and 25 of elastic support of both sides, and positioning maintenance is carried out with the posture in which the point 31 was stopped by the shoulder 28 in the inner part of [inner] housing 2. Thus, without the flexible substrate 30 carrying out a location gap, if the flexible substrate 30 rotates the pressurization section member 12 below and presses the flexible substrate 30, where positioning maintenance is carried out, it is pushed against the contact segment 8 of contact 6, and connects electrically in a right location (refer to drawing 7 and drawing 8).

[0021] Although it is dependent on the number of the contact segments 8 which the flexible substrate 30 with which the holding power of the flexible substrate 30 was fundamentally pressed by the pressurization member 12 at this time contacts by pressing, i.e., the pole of contact 6, as shown in drawing 8 , the holding power of the flexible substrate 30 is heightened by the elastic stability of the pieces 25 and 25 of both elastic support which it was pressed by the pressurization member 12 and carried out elastic deformation through the flexible substrate 30. Strengthening of the holding power by these pieces 25 and 25 of both elastic support can be effective when especially the number of contacts 6 is the connector 1 of few small poles, it can always secure the holding power more than fixed, and can prevent a location gap and omission of the flexible substrate 30.

[0022] Drawing 9 and drawing 10 show the gestalt of the operation constituted so that the convexly curved portions 26 and 26 of the pieces 25 and 25 of both elastic support might engage with the engagement hole or notches 32 and 32 which were prepared in the both-sides edge of the flexible substrate 30. If such a configuration is adopted, it not only can prevent more certainly the location gap and omission of the flexible substrate 30 to housing 2, but When external force, such as superfluous drawing force or leading-about force, joins the flexible substrate 30 Since the pieces 25 and 25 of both elastic support carry out elastic deformation and the engagement of convexly curved portions 26 and 26 to an engagement hole or notches 32 and 32 is canceled, breakage of the flexible substrate 30 or a connector 1 can be prevented beforehand.

[0023]

[Effect of the Invention] While being able to prevent the location gap and the ejection which can set at the time of wearing of a flexible substrate according to this invention since the piece of elastic support which presses elastically a part for the both ends of the flexible substrate arranged on the contact section of contact to the reinforcement metallic ornaments attached in the both ends of housing , and supports it to them prepared as having explained above , the holding power of the flexible substrate at the time of the pressurization connection by the pressurization member can raise , and a reliable connection condition can maintain .

[0024] Moreover, it not only can prevent a gap and omission of said flexible substrate more certainly, but according to invention concerning claim 3, it can prevent effectively breakage of said flexible substrate by external force, such as superfluous drawing force or leading-about force, or said connector.

[0025] Furthermore, according to invention concerning claim 4, the rotation bearing section of housing to a pressurization member is strengthened by reinforcement metallic ornaments, and is advantageous in reinforcement.

[Translation done.]

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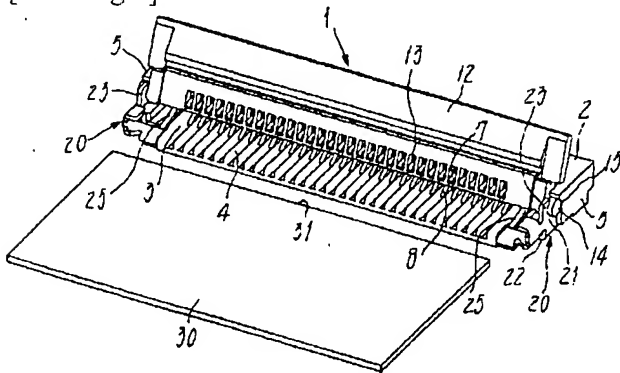
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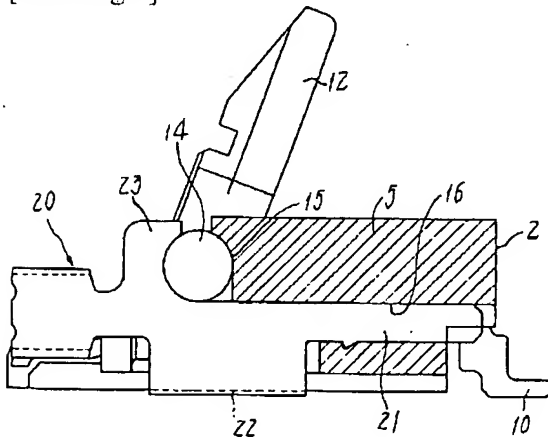
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DRAWINGS

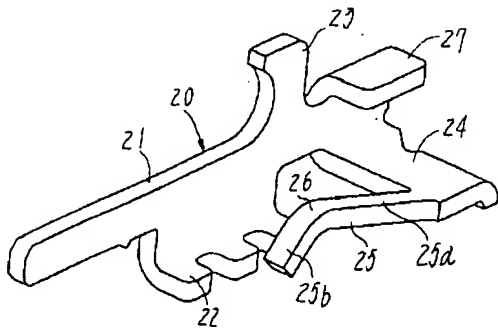
[Drawing 1]



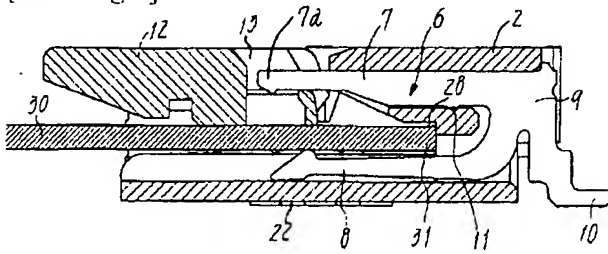
[Drawing 2]



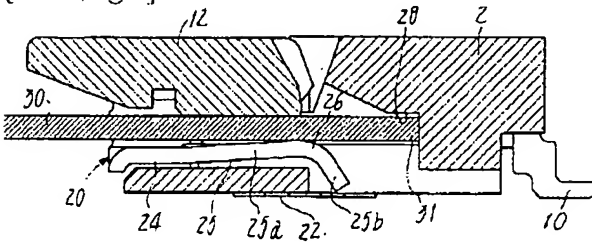
[Drawing 3]



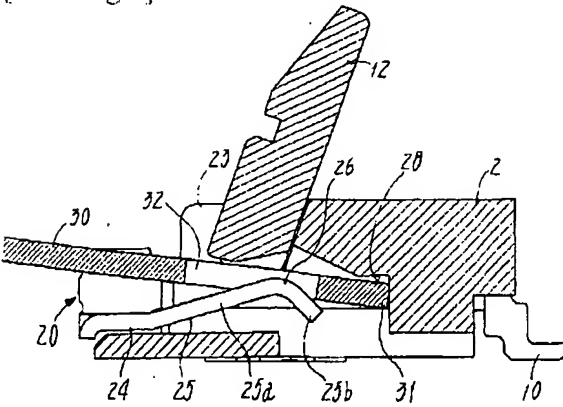
[Drawing 7]



[Drawing 8]



[Drawing 9]



[Drawing 10]

